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ABSTRACT

Available empirical data relating to the effects of changes in freshmen admissions at the university are summarized. Included are the data concerning the construction of an admissions index based on core high school GPA and verbal and quantitative test scores. Findings are that the arbitrary weighting of one-third test scores to two-thirds HS grades was nearly optimal; that equal weight of verbal and quantitative components was optimal. The second set of studies reported here imposed the new standards on UW applicants for fall 1973. Nearly all applicants had completed distribution requirements before their senior year and their admissions index distribution was identical to that of the fall 1970 entrants. Finally, the contribution of elective high school course work (in particular art and music) was explored. Electives did not improve grade prediction, and among the elective areas only business and home economics appeared significantly correlated with university success. (Author)

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Bureau of Testing
University of Washington—Seattle

Educational Assessment Center

University of Washington

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Summarization of Empirical Findings on New Freshman Admissions Standards

Clifford E. Lunneborg

Available empirical data relating to the effects of changes in freshman admissions at the University are summarized. Included are data concerning the construction of an admissions index based on core high school GPA and verbal and quantitative test scores. It was found that the arbitrary weighting of one-third test scores to two-thirds HS grades as proposed by the Ullman Committee was nearly optimal. It was also determined that equal weight of verbal and quantitative components was optimal. The second set of studies reported here imposed the new standards on UW applicants for fall 1973. Nearly all applicants had completed distribution requirements before their senior year and their admissions index distribution was identical to that of the fall 1970 entrants. Finally, the contribution of elective high school course work (in particular art and music) was explored. Electives did not improve grade prediction, and among the elective areas only business and home economics appeared significantly correlated with University success.

Educational Assessment Center Projects 254 and 255.

Summarization of Empirical Findings on New Freshman Admissions Standards

Clifford E. Lunneborg

Since 1968 increasing attention has been given the problem of limiting the growth of University enrollment as equitably as possible. The problem is highlighted by the fact that 9700 applications were received for 3600 openings in the fall 1971 freshman class. Of this number 7710 met the established entrance requirements and offers of admission were extended on a first-come, first-served basis. Work in earnest on the question was undertaken by a student-faculty committee appointed by the President fall 1971, the Ullman Committee, which reported its recommendations summer 1972 for review by administration and faculty. The Faculty Council on Academic Standards in turn submitted its recommendations, differing only minimally, to the Senate in May 1973.

The changes from previous entrance requirements were the following:

1. Increased core units. In recognition of the fact that the typical applicant now completes several more units of high school work than the 16 units usual in the 1950s and 60s when present requirements evolved, the Ullman Committee recommended raising from 12 to 15 the number of core units (work in English, mathematics, foreign language, natural and social sciences). Their rationale was to restore the amount of work in these areas to what had been required, i.e., approximately three-fourths of high school courses. Council review of this proposal established that a considerable number of high schools were offering fewer than 20 units and, to insure ample opportunity for students to pursue work outside the core areas, the Council liberalized the increase from 15 to 13 core units.

2. Minimum grade point average. The minimum cumulative high school GPA of 2.50 was maintained. It is to be calculated from courses taken in the core areas, however, rather than from all courses taken in high school. For routine admissions consideration traditional grades are required for all 13 core units. If more than 13 units are presented in the core areas, all will be counted in calculating the GPA.

3. Unit distribution. The 13 core units must include a minimum of 3 in English, 2 in the same foreign language, 2 of mathematics, 2 of social science, and 1 unit of laboratory science. The three additional required units may come from any of these five areas. Although the unit distribution requirements represent no change from past standards, the Council supported the Ullman Committee recommendation that routine admissions with deficiencies be discontinued.

4. Admission examination. This addition to admissions requirements represents the biggest change from the past. A standard college entrance examination of the verbal-quantitative type will be required to be used in

conjunction with high school grades to produce an admissions index of greater predictability of college success than GPA alone. Initially grades will be assigned about 2/3 and test scores 1/3 of the total weight.

5. Admissions index. Eligible applicants will be placed in rank order by their weighted scores of grades and tests, the admissions index, and offers of admission will proceed from the top until the freshman class is filled. This contrasts with the past practice of admitting in terms of receipt of application.

These recommendations were endorsed by the University Senate in May 1973 with the understanding that the faculty would continue to monitor the effects of the new standards both across the University and within certain disciplines. During fall quarter 1973 these standards were adopted by each of the faculties of those colleges admitting freshmen. It was agreed, however, that the 13th core unit would not be required of students entering before fall 1975 and that the high school GPA employed in computing admissions indices until that date would be based on all high school work. Thus for 1974-75 entrants the effective changes are the admissions test and the use of test scores with high school GPAs to determine eligibility.

Although the many groups considering the new standards had some empirical data available to them, the need was felt within the University to explore certain aspects to the new scheme. How should the admissions index be formulated? What would be the effects of changing the GPA computation to include only core courses? What numbers of presentday applicants fail to meet the distribution requirements? Reported here are data developed in a series of small studies conducted summer and fall 1973 by the Educational Assessment Center to answer some of these questions.

A. Development of the Admissions Index

On the basis of the data then available the Ullman Committee suggested that the admissions index would initially be one in which high school GPA was weighted twice as heavily as test scores and the verbal aptitude score weighted perhaps as much as four times the quantitative score. Their data were, however, several years old and this first study was undertaken so that the initial admissions index would be based on more recent University experience.

Studied were the 2,597 freshmen entering UW directly from high school fall 1970 who had (1) completed the Washington Pre-College (WPC) test battery while in high school and (2) for whom there was a university GPA. The University grades used were the cumulative GPAs as of spring 1972. The average student had been enrolled for 5.3 quarters and earned a GPA of 2.78. Three analyses were conducted. In the first analysis with weights for high school grades and test scores unconstrained, the optimal weighting was found to be one in which the verbal and quantitative tests had nearly equal value. The multiple correlation in this analysis was .538. The HS grades

in this analysis were separate GPAs in each of the five core areas for the first six semesters of work. On the basis of this result, a second analysis was performed with just two predictors--a single core GPA and the sum of the verbal and quantitative composite scores (because the two test scores are scaled to have the same distribution, adding the two is equivalent to giving them equal weight). In this analysis the multiple correlation was .526. The weight which resulted for the core GPA was approximately three times the weight given the total test score. Finally, a third analysis was conducted in which the weight assigned HS core GPA was constrained to be twice that of the test score weight. This last multiple correlation was .521.

The most impressive aspect to these results is the little effect that changing weights had on predictability. The difference between the first and second analyses was that in the first separate optimal weights were derived for each of the five HS core areas, while in the second analysis only the average GPA across all areas entered into the prediction. While using the first set of weights accounted for 28.9% of the variance, the prediction equation in the second analysis accounted for 27.7%. The difference between the second and third analyses was that in the second optimal weights were derived for the two predictors, core GPA and composite test score, while in the third the weight for the test score was forced to be one-half that for the GPA. Proportion of criterion variance accounted for dropped here from 27.7% to 27.1%. Thus, the uncomplicated weighting scheme suggested by the Ullman Committee seems appropriate, i.e., not only is it unnecessary to provide separate weights for high school work in different areas but a 2 to 1 weighting of grades and test scores does not degrade prediction. Surprisingly, verbal and quantitative test scores were equally important so that here, too, a simple approach is justified.

The last of these three analyses, therefore, was taken as the basis for the admissions index. After adjusting the weights for differences in the scales between grades and test scores (grades had a mean of 3.23, verbal test mean 53.9, quantitative test mean 52.2), and selecting a scale for the admissions index (AI) the following equation was developed.

$$AI = (15.8)(\text{core GPA}) + (0.27)(\text{sum of verbal and quantitative scores}) - (10.71).$$

The scale selected is such that for the entering class of 1970, the average AI value was 70.0 and the SD 10.0. It is expected, therefore, that future applicants would have scores in the range from 40 to 100. Table 1 was produced for the use of the Admissions Office and has been distributed by it to Washington State high schools. Although the formula and table were based upon data for core GPAs, this AI formula is being used to process fall 1974 applicants on the basis of their total HS GPAs.

UNIVERSITY OF WASHINGTON

USE OF TABLES FOR DETERMINING ADMISSION INDEX

These tables are designed for use with the student report form for the Washington Pre-College Testing Program.

1. Sum the Verbal Composite and Quantitative Composite scores from the test score report section of the WPC report form.

   Example:

Verbal Composite	57
Quantitative Composite	52
Sum	109

2. Locate the column of the table headed VC + QC = the computed sum.

   Example: VC + QC = 109 appears as a heading for a column on the third page of the tables

3. Obtain the student's overall high school grade point average from the WPC report form.

   Example: Overall high school g.p.a. 2.85

4. Trace down the selected column of the tables until the interval containing the overall high school g.p.a. is reached.

   Example: The g.p.a. of 2.85 lies within the tabled interval of 2.81 - 2.87

5. Opposite the selected g.p.a. interval is the desired Admission INDEX.

   Example: Opposite the interval 2.81 - 2.87 is the index 64. This is the admission index for a student with verbal and quantitative composite scores summing to 109 and with an overall high school g.p.a. between 2.81 and 2.87

VC+QC = 80		VC+QC = 81		VC+QC = 82		VC+QC = 83		VC+QC = 84		VC+QC = 85		VC+QC = 86		VC+QC = 87	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.55	51	2.50-2.53	51	2.50-2.51	51	2.50-2.56	52	2.50-2.54	52	2.50-2.52	52	2.50-2.51	52	2.50-2.55	53
2.56-2.61	52	2.54-2.59	52	2.52-2.57	52	2.57-2.62	53	2.55-2.60	53	2.53-2.59	53	2.52-2.57	53	2.56-2.61	54
2.62-2.67	53	2.60-2.65	53	2.58-2.64	53	2.63-2.68	54	2.61-2.67	54	2.60-2.65	54	2.58-2.63	54	2.62-2.69	55
2.68-2.74	54	2.66-2.72	54	2.65-2.70	54	2.69-2.75	55	2.68-2.73	55	2.66-2.71	55	2.64-2.70	55	2.69-2.74	56
2.75-2.80	55	2.73-2.78	55	2.71-2.76	55	2.76-2.81	56	2.74-2.79	56	2.72-2.79	56	2.71-2.74	56	2.75-2.80	57
2.81-2.86	56	2.79-2.84	56	2.77-2.83	56	2.82-2.87	57	2.80-2.86	57	2.79-2.84	57	2.77-2.82	57	2.81-2.87	58
2.87-2.92	57	2.85-2.91	57	2.84-2.89	57	2.88-2.94	58	2.87-2.92	58	2.85-2.90	58	2.83-2.89	58	2.88-2.93	59
2.93-2.99	58	2.92-2.97	58	2.90-2.95	58	2.95-3.00	59	2.93-2.99	59	2.91-2.96	59	2.90-2.95	59	2.94-2.99	60
3.00-3.05	59	2.98-3.03	59	2.96-3.02	59	3.01-3.06	60	2.99-3.05	60	2.97-3.03	60	2.96-3.01	60	3.00-3.06	61
3.06-3.11	60	3.04-3.10	60	3.03-3.08	60	3.07-3.13	61	3.06-3.11	61	3.04-3.09	61	3.02-3.07	61	3.07-3.12	62
3.12-3.18	61	3.11-3.15	61	3.09-3.14	61	3.14-3.19	62	3.12-3.17	62	3.10-3.15	62	3.08-3.14	62	3.13-3.19	63
3.19-3.24	62	3.17-3.22	62	3.15-3.21	62	3.20-3.25	63	3.18-3.23	63	3.16-3.22	63	3.15-3.20	63	3.20-3.25	64
3.25-3.30	63	3.23-3.29	63	3.22-3.27	63	3.26-3.31	64	3.24-3.30	64	3.23-3.28	64	3.21-3.25	64	3.26-3.31	65
3.31-3.37	64	3.30-3.35	64	3.28-3.33	64	3.32-3.38	65	3.31-3.36	65	3.29-3.34	65	3.27-3.33	65	3.32-3.37	66
3.38-3.43	65	3.36-3.41	65	3.34-3.39	65	3.39-3.44	66	3.37-3.42	66	3.35-3.41	66	3.34-3.39	66	3.38-3.44	67
3.44-3.49	66	3.42-3.48	66	3.40-3.46	66	3.45-3.50	67	3.43-3.49	67	3.42-3.47	67	3.40-3.46	67	3.45-3.50	68
3.50-3.56	67	3.49-3.54	67	3.47-3.52	67	3.51-3.57	68	3.50-3.55	68	3.48-3.53	68	3.46-3.52	68	3.51-3.56	69
3.57-3.62	68	3.55-3.60	68	3.53-3.58	69	3.58-3.63	69	3.56-3.61	69	3.54-3.60	69	3.53-3.58	69	3.57-3.62	70
3.63-3.68	69	3.61-3.66	69	3.59-3.65	69	3.64-3.69	70	3.62-3.68	70	3.61-3.66	70	3.59-3.64	70	3.63-3.68	71
3.69-3.74	70	3.67-3.73	70	3.66-3.71	70	3.70-3.76	71	3.69-3.74	71	3.67-3.72	71	3.66-3.70	71	3.70-3.75	72
3.75-3.81	71	3.74-3.79	71	3.72-3.77	71	3.77-3.82	72	3.75-3.80	72	3.73-3.79	72	3.71-3.77	72	3.76-3.81	73
3.82-3.87	72	3.80-3.85	72	3.78-3.84	72	3.83-3.88	73	3.81-3.87	73	3.80-3.85	73	3.78-3.83	73	3.82-3.88	74
3.88-3.93	73	3.86-3.92	73	3.85-3.90	73	3.89-3.95	74	3.88-3.93	74	3.86-3.91	74	3.84-3.89	74	3.89-3.94	75
3.94-4.00	74	3.93-3.98	74	3.91-3.96	74	3.96-4.00	75	3.94-3.99	75	3.92-3.97	75	3.90-3.95	75	3.95-4.00	76
		3.99-4.00	75	3.97-4.00	75			4.00	76	3.98-4.00	76	3.97-4.00	76		

VC+QC = 8 8		VC+QC = 8 9		VC+QC = 9 0		VC+QC = 9 1		VC+QC = 9 2		VC+QC = 9 3		VC+QC = 9 4		VC+QC = 9 5	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.53	53	2.51-2.52	53	2.50	53	2.50-2.55	54	2.50-2.53	54	2.50-2.51	54	2.50-2.56	55	2.50-2.54	55
2.54-2.60	54	2.53-2.58	54	2.51-2.56	54	2.56-2.61	55	2.54-2.59	55	2.52-2.57	55	2.57-2.62	56	2.55-2.60	56
2.61-2.66	55	2.59-2.64	55	2.57-2.63	55	2.62-2.67	56	2.60-2.65	56	2.58-2.64	56	2.63-2.69	57	2.61-2.67	57
2.67-2.72	56	2.65-2.71	56	2.64-2.69	56	2.68-2.74	57	2.67-2.72	57	2.65-2.70	57	2.69-2.75	58	2.68-2.73	58
2.73-2.79	57	2.72-2.77	57	2.70-2.75	57	2.75-2.80	58	2.73-2.78	58	2.71-2.76	58	2.75-2.81	59	2.74-2.79	59
2.80-2.85	58	2.78-2.83	58	2.76-2.82	58	2.81-2.86	59	2.79-2.84	59	2.77-2.83	59	2.82-2.87	60	2.80-2.86	60
2.86-2.91	59	2.84-2.90	59	2.83-2.88	59	2.87-2.92	60	2.85-2.91	60	2.84-2.89	60	2.88-2.94	61	2.87-2.92	61
2.92-2.98	60	2.91-2.96	60	2.89-2.94	60	2.93-2.99	61	2.92-2.97	61	2.90-2.95	61	2.95-3.00	62	2.93-2.98	62
2.99-3.04	61	2.97-3.02	61	2.95-3.01	61	3.00-3.05	62	2.98-3.03	62	2.96-3.02	62	3.01-3.06	63	2.99-3.05	63
3.05-3.10	62	3.03-3.09	62	3.02-3.07	62	3.06-3.11	63	3.04-3.10	63	3.03-3.08	63	3.07-3.13	64	3.06-3.11	64
3.11-3.17	63	3.10-3.15	63	3.08-3.13	63	3.12-3.18	64	3.11-3.16	64	3.09-3.14	64	3.14-3.19	65	3.12-3.17	65
3.18-3.23	64	3.16-3.21	64	3.14-3.19	64	3.19-3.24	65	3.17-3.22	65	3.15-3.21	65	3.20-3.25	66	3.18-3.23	66
3.24-3.29	65	3.22-3.27	65	3.20-3.26	65	3.25-3.30	66	3.23-3.29	66	3.22-3.27	66	3.26-3.31	67	3.24-3.30	67
3.30-3.35	66	3.28-3.34	66	3.27-3.32	66	3.31-3.37	67	3.30-3.35	67	3.28-3.33	67	3.32-3.38	68	3.31-3.36	68
3.36-3.42	67	3.35-3.40	67	3.33-3.38	67	3.38-3.43	68	3.36-3.41	68	3.35-3.40	68	3.39-3.44	69	3.37-3.42	69
3.43-3.48	68	3.41-3.46	68	3.39-3.45	68	3.44-3.49	69	3.42-3.48	69	3.41-3.46	69	3.45-3.50	70	3.43-3.49	70
3.49-3.54	69	3.47-3.53	69	3.46-3.51	69	3.50-3.56	70	3.49-3.54	70	3.47-3.52	70	3.51-3.57	71	3.50-3.55	71
3.55-3.61	70	3.54-3.59	70	3.52-3.57	70	3.57-3.62	71	3.55-3.60	71	3.53-3.58	71	3.58-3.63	72	3.56-3.61	72
3.62-3.67	71	3.60-3.65	71	3.58-3.64	71	3.63-3.68	72	3.61-3.66	72	3.59-3.65	72	3.64-3.69	73	3.62-3.68	73
3.68-3.73	72	3.66-3.72	72	3.65-3.70	72	3.69-3.75	73	3.67-3.73	73	3.66-3.71	73	3.70-3.76	74	3.69-3.74	74
3.74-3.80	73	3.73-3.78	73	3.71-3.76	73	3.76-3.81	74	3.74-3.79	74	3.72-3.77	74	3.77-3.82	75	3.75-3.80	75
3.81-3.86	74	3.79-3.84	74	3.77-3.83	74	3.82-3.87	75	3.80-3.85	75	3.78-3.84	75	3.83-3.89	76	3.81-3.87	76
3.87-3.92	75	3.85-3.91	75	3.84-3.89	75	3.88-3.93	76	3.86-3.92	76	3.85-3.90	76	3.90-3.95	77	3.88-3.93	77
3.93-3.99	76	3.92-3.97	76	3.90-3.95	76	3.94-4.00	77	3.93-3.98	77	3.91-3.96	77	3.96-4.00	78	3.94-3.99	78
4.00	77	3.98-4.00	77	3.96-4.03	77			3.99-4.00	78	3.97-4.00	78			4.00	79

VC+QC = 9 6		VC+QC = 9 7		VC+QC = 9 8		VC+QC = 9 9		VC+QC = 1 0 0		VC+QC = 1 0 1		VC+QC = 1 0 2		VC+QC = 1 0 3	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.52	55	2.50-2.51	55	2.50-2.55	56	2.50-2.53	56	2.50-2.52	56	2.50	56	2.50-2.55	57	2.50-2.53	57
2.53-2.59	56	2.52-2.57	56	2.56-2.62	57	2.54-2.60	57	2.53-2.58	57	2.51-2.56	57	2.56-2.61	58	2.54-2.59	58
2.60-2.65	57	2.58-2.63	57	2.63-2.68	58	2.61-2.66	58	2.59-2.64	58	2.57-2.63	58	2.62-2.67	59	2.60-2.66	59
2.66-2.71	58	2.64-2.70	58	2.69-2.74	59	2.67-2.72	59	2.65-2.71	59	2.64-2.69	59	2.68-2.74	60	2.67-2.72	60
2.72-2.79	59	2.71-2.76	59	2.75-2.80	60	2.73-2.79	60	2.72-2.77	60	2.70-2.75	60	2.75-2.80	61	2.73-2.78	61
2.79-2.84	60	2.77-2.82	60	2.81-2.87	61	2.80-2.85	61	2.78-2.83	61	2.76-2.82	61	2.81-2.86	62	2.79-2.84	62
2.85-2.90	61	2.83-2.88	61	2.88-2.93	62	2.86-2.91	62	2.84-2.90	62	2.83-2.88	62	2.87-2.93	63	2.85-2.91	63
2.91-2.97	62	2.89-2.95	62	2.94-2.99	63	2.92-2.98	63	2.91-2.96	63	2.89-2.94	63	2.94-2.99	64	2.92-2.97	64
2.98-3.03	63	2.96-3.01	63	3.00-3.06	64	2.99-3.04	64	2.97-3.02	64	2.95-3.01	64	3.00-3.05	65	2.98-3.03	65
3.04-3.09	64	3.02-3.07	64	3.07-3.12	65	3.05-3.10	65	3.03-3.09	65	3.02-3.07	65	3.06-3.11	66	3.04-3.10	66
3.10-3.15	65	3.08-3.14	65	3.13-3.18	66	3.11-3.17	66	3.10-3.15	66	3.08-3.13	66	3.12-3.19	67	3.11-3.16	67
3.16-3.22	66	3.15-3.20	66	3.19-3.25	67	3.18-3.23	67	3.16-3.21	67	3.14-3.19	67	3.19-3.24	68	3.17-3.22	68
3.23-3.28	67	3.21-3.26	67	3.26-3.31	68	3.24-3.29	68	3.22-3.27	68	3.20-3.26	68	3.25-3.31	69	3.23-3.29	69
3.29-3.34	68	3.27-3.33	68	3.32-3.37	69	3.30-3.36	69	3.28-3.34	69	3.27-3.32	69	3.31-3.37	70	3.30-3.35	70
3.35-3.41	69	3.34-3.39	69	3.38-3.44	70	3.37-3.42	70	3.35-3.40	70	3.33-3.39	70	3.38-3.43	71	3.36-3.41	71
3.42-3.47	70	3.40-3.45	70	3.45-3.50	71	3.43-3.48	71	3.41-3.46	71	3.39-3.45	71	3.44-3.49	72	3.42-3.48	72
3.48-3.53	71	3.46-3.52	71	3.51-3.56	72	3.49-3.54	72	3.47-3.53	72	3.46-3.51	72	3.50-3.56	73	3.49-3.54	73
3.54-3.60	72	3.53-3.58	72	3.57-3.62	73	3.55-3.61	73	3.54-3.59	73	3.52-3.57	73	3.57-3.62	74	3.55-3.60	74
3.61-3.66	73	3.59-3.64	73	3.63-3.69	74	3.62-3.67	74	3.60-3.65	74	3.58-3.64	74	3.63-3.69	75	3.61-3.67	75
3.67-3.72	74	3.65-3.71	74	3.70-3.75	75	3.68-3.73	75	3.66-3.72	75	3.65-3.70	75	3.69-3.75	76	3.68-3.73	76
3.73-3.79	75	3.72-3.77	75	3.76-3.81	76	3.74-3.80	76	3.73-3.78	76	3.71-3.76	76	3.76-3.81	77	3.74-3.79	77
3.80-3.85	76	3.78-3.83	76	3.82-3.88	77	3.81-3.86	77	3.79-3.84	77	3.77-3.83	77	3.82-3.87	78	3.80-3.85	78
3.86-3.91	77	3.84-3.89	77	3.89-3.94	78	3.87-3.92	78	3.85-3.91	78	3.84-3.89	78	3.88-3.93	79	3.86-3.92	79
3.92-3.97	78	3.90-3.96	78	3.95-4.00	79	3.93-3.99	79	3.92-3.97	79	3.90-3.95	79	3.94-4.00	80	3.93-3.98	80
3.98-4.00	79	3.97-4.00	79			4.00	80	3.98-4.00	80	3.96-4.00	80			3.99-4.00	81

VC+DC = 1 0 4		VC+DC = 1 0 5		VC+DC = 1 0 6		VC+DC = 1 0 7		VC+DC = 1 0 8		VC+DC = 1 0 9		VC+DC = 1 1 0		VC+DC = 1 1 1	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.51	57	2.51-2.56	58	2.5[illegible]-2.54	58	2.51-2.52	58	2.50-2.51	58	2.50-2.55	59	2.50-2.54	60	2.50-2.52	59
2.52-2.58	58	2.57-2.62	59	2.55-2.60	59	2.53-2.59	59	2.52-2.57	59	2.56-2.62	60	2.55-2.60	61	2.53-2.58	60
2.59-2.64	59	2.63-2.68	60	2.61-2.67	60	2.60-2.65	60	2.58-2.63	60	2.63-2.69	61	2.61-2.66	61	2.59-2.64	61
2.65-2.70	60	2.69-2.75	61	2.68-2.73	61	2.66-2.71	61	2.64-2.70	61	2.69-2.74	62	2.67-2.72	62	2.65-2.71	62
2.71-2.76	61	2.76-2.81	62	2.74-2.79	62	2.72-2.78	62	2.71-2.76	62	2.75-2.80	63	2.73-2.79	63	2.72-2.77	63
2.77-2.83	62	2.82-2.87	63	2.80-2.86	63	2.79-2.84	63	2.77-2.82	63	2.81-2.87	64	2.80-2.85	64	2.78-2.83	64
2.84-2.89	63	2.88-2.94	64	2.87-2.92	64	2.85-2.90	64	2.83-2.89	64	2.88-2.93	65	2.86-2.91	65	2.84-2.90	65
2.90-2.95	64	2.95-3.00	65	2.93-2.99	65	2.91-2.97	65	2.90-2.95	65	2.94-2.99	66	2.92-2.98	66	2.91-2.96	66
2.96-3.02	65	3.01-3.06	66	2.99-3.05	66	2.98-3.03	66	2.96-3.01	66	3.00-3.06	67	2.99-3.04	67	2.97-3.02	67
3.03-3.08	66	3.07-3.13	67	3.06-3.11	67	3.04-3.09	67	3.02-3.07	67	3.07-3.12	68	3.05-3.10	68	3.03-3.09	68
3.09-3.14	67	3.14-3.19	68	3.12-3.17	68	3.10-3.15	68	3.08-3.14	68	3.13-3.19	69	3.11-3.17	69	3.10-3.15	69
3.15-3.21	68	3.20-3.25	69	3.18-3.23	69	3.16-3.22	69	3.15-3.20	69	3.19-3.25	70	3.18-3.23	70	3.16-3.21	70
3.22-3.27	69	3.26-3.32	70	3.24-3.30	70	3.23-3.28	70	3.21-3.26	70	3.26-3.31	71	3.24-3.29	71	3.22-3.28	71
3.28-3.33	70	3.33-3.38	71	3.31-3.36	71	3.29-3.34	71	3.27-3.33	71	3.32-3.37	72	3.30-3.36	72	3.29-3.34	72
3.34-3.40	71	3.39-3.44	72	3.37-3.42	72	3.35-3.41	72	3.34-3.39	72	3.38-3.44	73	3.37-3.42	73	3.35-3.40	73
3.41-3.46	72	3.45-3.50	73	3.43-3.49	73	3.42-3.47	73	3.40-3.45	73	3.45-3.50	74	3.43-3.48	74	3.41-3.46	74
3.47-3.52	73	3.51-3.57	74	3.50-3.55	74	3.48-3.53	74	3.46-3.52	74	3.51-3.56	75	3.49-3.54	75	3.47-3.53	75
3.53-3.58	74	3.58-3.63	75	3.56-3.61	75	3.54-3.60	75	3.53-3.58	75	3.57-3.63	76	3.55-3.61	76	3.54-3.59	76
3.59-3.65	75	3.64-3.69	75	3.62-3.68	75	3.61-3.66	76	3.59-3.64	76	3.64-3.69	77	3.62-3.67	77	3.60-3.65	77
3.66-3.71	76	3.70-3.76	77	3.69-3.74	77	3.67-3.72	77	3.65-3.71	77	3.70-3.75	78	3.68-3.73	78	3.66-3.72	78
3.72-3.77	77	3.77-3.82	78	3.75-3.80	78	3.73-3.79	78	3.72-3.77	78	3.76-3.81	79	3.74-3.[illegible]	79	3.73-3.78	79
3.78-3.84	78	3.83-3.88	79	3.81-3.87	79	3.80-3.85	79	3.78-3.83	79	3.82-3.89	80	3.81-3.[illegible]	80	3.79-3.84	80
3.85-3.90	79	3.89-3.95	80	3.88-3.93	80	3.86-3.91	80	3.84-3.89	80	3.89-3.94	81	3.87-3.[illegible]	81	3.85-3.91	81
3.91-3.96	80	3.96-4.00	81	3.94-3.99	81	3.92-3.97	81	3.90-3.96	81	3.95-4.00	82	3.93-3.99	82	3.92-3.97	82
3.97-4.[illegible]	81			4.00	82	3.98-4.00	82	3.97-4.00	82			4.00	83	3.98-4.00	83

VC+DC = 1 1 2		VC+DC = 1 1 3		VC+DC = 1 1 4		VC+DC = 1 1 5		VC+DC = 1 1 6		VC+DC = 1 1 7		VC+DC = 1 1 8		VC+DC = 1 1 9	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50	59	2.51-2.55	60	2.50-2.53	60	2.50-2.51	60	2.50	60	2.55-2.54	61	2.55-2.59	61	2.55-2.57	61
2.51-2.56	60	2.56-2.61	61	2.54-2.59	61	2.52-2.58	61	2.51-2.56	61	2.55-2.60	62	2.60-2.64	62	2.58-2.62	62
2.57-2.63	61	2.62-2.67	62	2.60-2.65	62	2.59-2.64	62	2.57-2.62	62	2.61-2.67	63	2.65-2.69	63	2.63-2.67	63
2.64-2.69	62	2.68-2.74	63	2.67-2.72	63	2.65-2.70	63	2.63-2.68	63	2.68-2.73	64	2.70-2.74	64	2.68-2.73	64
2.70-2.75	63	2.75-2.80	64	2.73-2.78	64	2.71-2.76	64	2.69-2.75	64	2.74-2.79	65	2.75-2.80	65	2.74-2.79	65
2.76-2.82	64	2.81-2.86	65	2.79-2.85	65	2.77-2.83	65	2.76-2.81	65	2.80-2.86	66	2.81-2.86	66	2.80-2.85	66
2.83-2.88	65	2.87-2.93	66	2.86-2.91	66	2.84-2.89	66	2.82-2.87	66	2.87-2.92	67	2.87-2.92	67	2.86-2.91	67
2.89-2.94	66	2.94-2.99	67	2.92-2.97	67	2.90-2.95	67	2.88-2.94	67	2.93-2.99	68	2.93-2.97	68	2.92-2.97	68
2.95-3.01	67	3.00-3.05	68	2.99-3.03	68	2.96-3.02	68	2.95-3.00	68	2.99-3.05	69	2.98-3.03	69	2.98-3.03	69
3.02-3.07	68	3.06-3.11	69	3.04-3.10	69	3.03-3.08	69	3.01-3.06	69	3.06-3.11	70	3.04-3.09	70	3.04-3.09	70
3.08-3.13	69	3.12-3.18	70	3.11-3.16	70	3.09-3.14	70	3.07-3.13	70	3.12-3.17	71	3.10-3.15	71	3.10-3.14	71
3.14-3.19	70	3.19-3.24	71	3.17-3.22	71	3.15-3.21	71	3.14-3.19	71	3.18-3.24	72	3.16-3.22	72	3.15-3.20	72
3.20-3.25	71	3.25-3.30	72	3.23-3.29	72	3.22-3.27	72	3.20-3.25	72	3.25-3.30	73	3.23-3.28	73	3.21-3.26	73
3.27-3.32	72	3.31-3.37	73	3.30-3.35	73	3.28-3.33	73	3.26-3.32	73	3.31-3.36	74	3.29-3.34	74	3.27-3.33	74
3.33-3.38	73	3.38-3.43	74	3.36-3.41	74	3.34-3.40	74	3.33-3.38	74	3.37-3.42	75	3.35-3.41	75	3.34-3.39	75
3.39-3.45	74	3.44-3.49	75	3.42-3.48	75	3.41-3.46	75	3.39-3.44	75	3.43-3.49	76	3.42-3.47	76	3.40-3.46	76
3.46-3.51	75	3.50-3.56	76	3.49-3.54	76	3.47-3.52	76	3.45-3.50	76	3.50-3.55	77	3.48-3.53	77	3.46-3.52	77
3.52-3.57	76	3.57-3.62	77	3.55-3.60	77	3.53-3.59	77	3.51-3.57	77	3.56-3.61	78	3.54-3.60	78	3.53-3.58	78
3.59-3.64	77	3.63-3.69	78	3.61-3.67	78	3.60-3.65	78	3.58-3.63	78	3.62-3.68	79	3.61-3.66	79	3.59-3.64	79
3.65-3.70	78	3.69-3.75	79	3.68-3.73	79	3.66-3.71	79	3.64-3.69	79	3.69-3.74	80	3.67-3.72	80	3.65-3.71	80
3.71-3.76	79	3.76-3.81	80	3.74-3.79	80	3.72-3.77	80	3.70-3.76	80	3.75-3.80	81	3.73-3.79	81	3.72-3.77	81
3.77-3.83	80	3.82-3.87	81	3.80-3.85	81	3.78-3.84	81	3.77-3.82	81	3.81-3.87	82	3.80-3.85	82	3.78-3.83	82
3.84-3.89	81	3.88-3.93	82	3.86-3.92	82	3.85-3.90	82	3.83-3.88	82	3.88-3.93	83	3.86-3.91	83	3.84-3.89	83
3.90-3.95	82	3.94-4.00	83	3.93-3.98	83	3.91-3.96	83	3.89-3.95	83	3.94-3.99	84	3.92-3.99	84	3.90-3.96	84
3.96-4.00	83			3.99-4.00	84	3.97-4.00	84	3.96-4.00	84	4.00	85	3.99-4.00	85	3.97-4.00	85

VC+DC = 1 2 0		VC+DC = 1 2 1		VC+DC = 1 2 2		VC+DC = 1 2 3		VC+DC = 1 2 4		VC+DC = 1 2 5		VC+DC = 1 2 6		VC+DC = 1 2 7	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.51-2.55	62	2.51-2.54	62	2.50-2.52	62	2.50	62	2.50-2.55	63	2.50-2.53	63	2.50	63	2.50	63
2.56-2.62	63	2.55-2.60	63	2.53-2.59	63	2.51-2.56	63	2.56-2.61	64	2.54-2.59	64	2.51-2.56	64	2.51-2.56	64
2.63-2.68	64	2.61-2.66	64	2.60-2.64	64	2.57-2.63	64	2.62-2.67	65	2.60-2.66	65	2.57-2.63	65	2.57-2.63	65
2.69-2.74	65	2.67-2.72	65	2.65-2.71	65	2.64-2.69	65	2.68-2.74	66	2.67-2.72	66	2.64-2.69	66	2.64-2.69	66
2.75-2.81	66	2.73-2.79	66	2.72-2.77	66	2.70-2.75	66	2.75-2.80	67	2.73-2.78	67	2.71-2.77	67	2.70-2.75	67
2.82-2.87	67	2.80-2.85	67	2.78-2.83	67	2.76-2.82	67	2.81-2.86	68	2.79-2.85	68	2.78-2.83	68	2.76-2.81	68
2.88-2.93	68	2.86-2.91	68	2.84-2.90	68	2.83-2.88	68	2.87-2.93	69	2.86-2.91	69	2.84-2.89	69	2.82-2.87	69
2.94-2.99	69	2.92-2.98	69	2.91-2.95	69	2.89-2.94	69	2.94-2.99	70	2.92-2.97	70	2.90-2.95	70	2.88-2.94	70
3.01-3.06	70	2.99-3.04	71	2.97-3.02	70	2.95-3.01	70	3.00-3.05	71	2.98-3.03	71	2.96-3.02	71	2.95-3.00	71
3.07-3.12	71	3.05-3.10	71	3.03-3.09	71	3.02-3.07	71	3.06-3.11	72	3.04-3.10	72	3.03-3.09	72	3.01-3.06	72
3.13-3.18	72	3.11-3.17	72	3.10-3.15	72	3.08-3.13	72	3.12-3.18	73	3.11-3.16	73	3.09-3.14	73	3.07-3.13	73
3.19-3.25	73	3.18-3.23	73	3.16-3.21	73	3.14-3.20	73	3.19-3.24	74	3.17-3.22	74	3.15-3.21	74	3.14-3.19	74
3.26-3.31	74	3.24-3.29	74	3.22-3.28	74	3.21-3.26	74	3.25-3.30	75	3.23-3.29	75	3.22-3.27	75	3.20-3.25	75
3.32-3.37	75	3.30-3.36	75	3.29-3.34	75	3.27-3.32	75	3.31-3.37	76	3.30-3.35	76	3.28-3.33	76	3.26-3.32	76
3.38-3.44	76	3.37-3.42	76	3.35-3.40	76	3.33-3.38	76	3.38-3.43	77	3.36-3.41	77	3.34-3.40	77	3.33-3.38	77
3.45-3.50	77	3.43-3.48	77	3.41-3.46	77	3.39-3.45	77	3.44-3.49	78	3.42-3.48	78	3.41-3.46	78	3.39-3.44	78
3.51-3.56	78	3.49-3.53	78	3.47-3.53	78	3.46-3.51	78	3.50-3.56	79	3.49-3.54	79	3.47-3.52	79	3.45-3.51	79
3.57-3.63	79	3.56-3.61	79	3.54-3.59	79	3.52-3.57	79	3.57-3.62	80	3.55-3.61	80	3.53-3.59	80	3.52-3.57	80
3.64-3.69	80	3.62-3.67	80	3.61-3.65	80	3.59-3.64	80	3.63-3.68	81	3.61-3.67	81	3.60-3.65	81	3.58-3.63	81
3.70-3.75	81	3.69-3.73	81	3.66-3.72	81	3.65-3.70	81	3.69-3.75	82	3.68-3.73	82	3.66-3.71	82	3.64-3.69	82
3.76-3.81	82	3.74-3.80	82	3.73-3.78	82	3.71-3.76	82	3.76-3.81	83	3.74-3.79	83	3.72-3.77	83	3.70-3.76	83
3.82-3.88	83	3.81-3.86	83	3.79-3.84	83	3.77-3.83	83	3.82-3.87	84	3.80-3.85	84	3.78-3.84	84	3.77-3.82	84
3.89-3.94	84	3.87-3.92	84	3.85-3.91	84	3.84-3.89	84	3.88-3.94	85	3.86-3.92	85	3.85-3.90	85	3.83-3.88	85
3.95-4.00	85	3.93-3.99	85	3.92-3.97	85	3.90-3.95	85	3.95-4.00	86	3.93-3.98	86	3.91-3.96	86	3.89-3.95	86
		4.00	86	3.98-4.00	86	3.96-4.00	86			3.99-4.00	87	3.97-4.00	87	3.96-4.00	87

VC+DC = 1 2 8		VC+DC = 1 2 9		VC+DC = 1 3 0		VC+DC = 1 3 1		VC+DC = 1 3 2		VC+DC = 1 3 3		VC+DC = 1 3 4		VC+DC = 1 3 5	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.51-2.54	64	2.51-2.52	64	2.50-2.51	64	2.50-2.55	65	2.50-2.54	65	2.50-2.52	65	2.50	65	2.50-2.55	65
2.55-2.61	65	2.53-2.59	65	2.52-2.57	65	2.56-2.62	66	2.55-2.60	66	2.53-2.58	66	2.51-2.56	66	2.56-2.61	67
2.61-2.67	66	2.60-2.65	66	2.58-2.63	66	2.63-2.68	67	2.61-2.66	67	2.59-2.64	67	2.57-2.62	67	2.62-2.67	68
2.68-2.73	67	2.66-2.71	67	2.64-2.70	67	2.69-2.74	68	2.67-2.73	68	2.65-2.71	68	2.64-2.69	68	2.68-2.74	69
2.74-2.79	68	2.72-2.78	68	2.71-2.76	68	2.75-2.81	69	2.74-2.79	69	2.72-2.77	69	2.70-2.75	69	2.75-2.80	70
2.80-2.86	69	2.79-2.84	69	2.77-2.82	69	2.82-2.87	70	2.80-2.85	71	2.78-2.83	70	2.76-2.82	70	2.81-2.86	71
2.87-2.92	70	2.85-2.90	70	2.83-2.89	70	2.88-2.93	71	2.86-2.91	71	2.84-2.90	71	2.83-2.88	71	2.87-2.93	72
2.93-2.98	71	2.91-2.97	71	2.90-2.95	71	2.94-2.99	72	2.92-2.98	72	2.91-2.96	72	2.89-2.94	72	2.94-2.99	73
2.99-3.05	72	2.98-3.03	72	2.96-3.01	72	3.00-3.06	73	2.99-3.04	73	2.97-3.02	73	2.95-3.01	73	3.00-3.05	74
3.06-3.11	73	3.04-3.09	73	3.02-3.07	73	3.07-3.12	74	3.05-3.10	74	3.03-3.09	74	3.02-3.07	74	3.06-3.12	75
3.12-3.17	74	3.10-3.16	74	3.08-3.14	74	3.13-3.18	75	3.11-3.17	75	3.10-3.15	75	3.08-3.13	75	3.13-3.18	76
3.18-3.24	75	3.17-3.22	75	3.15-3.20	75	3.19-3.25	76	3.18-3.23	76	3.16-3.21	76	3.14-3.20	76	3.19-3.25	77
3.25-3.30	76	3.23-3.29	76	3.21-3.26	76	3.26-3.31	77	3.24-3.29	77	3.22-3.28	77	3.21-3.26	77	3.26-3.31	78
3.31-3.36	77	3.29-3.34	77	3.27-3.33	77	3.32-3.37	78	3.30-3.36	78	3.29-3.34	78	3.27-3.32	78	3.32-3.37	79
3.37-3.42	78	3.35-3.41	78	3.34-3.39	78	3.38-3.44	79	3.37-3.42	79	3.35-3.40	79	3.33-3.39	79	3.38-3.43	80
3.43-3.49	79	3.42-3.47	79	3.40-3.45	79	3.45-3.50	80	3.43-3.48	80	3.41-3.47	80	3.39-3.45	80	3.44-3.49	81
3.50-3.55	80	3.48-3.53	81	3.46-3.52	80	3.51-3.56	81	3.49-3.55	81	3.48-3.53	81	3.46-3.51	81	3.50-3.56	82
3.56-3.61	81	3.54-3.60	81	3.53-3.58	81	3.57-3.63	82	3.56-3.61	82	3.54-3.59	82	3.52-3.57	82	3.57-3.62	83
3.62-3.68	82	3.61-3.66	82	3.59-3.64	82	3.64-3.69	83	3.62-3.67	83	3.61-3.65	83	3.58-3.64	83	3.63-3.69	84
3.69-3.74	83	3.67-3.72	83	3.65-3.71	83	3.70-3.75	84	3.68-3.73	84	3.66-3.72	84	3.65-3.70	84	3.70-3.75	85
3.75-3.80	84	3.73-3.79	84	3.72-3.77	84	3.76-3.81	85	3.74-3.80	85	3.73-3.78	85	3.71-3.76	85	3.76-3.81	86
3.81-3.87	85	3.80-3.85	85	3.78-3.83	85	3.82-3.88	86	3.81-3.86	86	3.79-3.84	86	3.77-3.83	86	3.82-3.87	87
3.88-3.93	86	3.86-3.91	86	3.84-3.90	86	3.89-3.94	87	3.87-3.92	87	3.85-3.90	87	3.84-3.89	87	3.88-3.94	88
3.94-3.99	87	3.92-3.98	87	3.91-3.95	87	3.95-4.00	88	3.93-3.99	88	3.92-3.97	88	3.90-3.95	88	3.95-4.00	89
4.00	88	3.99-4.00	88	3.97-4.00	88			4.00	89	3.98-4.00	89	3.96-4.00	89		

VC+QC = 1 3 6		VC+QC = 1 3 7		VC+QC = 1 3 9		VC+QC = 1 4 0		VC+QC = 1 4 1		VC+QC = 1 4 2		VC+QC = 1 4 3	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.53	66	2.50-2.51	66	2.50	66	2.50-2.54	67	2.50-2.52	67	2.50-2.51	67	2.50-2.54	68
2.54-2.59	67	2.52-2.58	67	2.51-2.56	67	2.55-2.60	68	2.53-2.59	68	2.52-2.57	68	2.55-2.60	69
2.60-2.65	68	2.59-2.64	68	2.57-2.62	68	2.61-2.67	69	2.60-2.65	69	2.58-2.63	69	2.61-2.66	70
2.67-2.72	69	2.65-2.70	69	2.63-2.69	69	2.68-2.73	70	2.66-2.71	70	2.64-2.70	70	2.67-2.72	71
2.73-2.78	70	2.71-2.77	71	2.70-2.75	70	2.74-2.79	71	2.72-2.78	71	2.71-2.75	71	2.73-2.78	72
2.79-2.85	71	2.78-2.83	71	2.76-2.81	71	2.80-2.86	72	2.79-2.84	72	2.77-2.82	72	2.79-2.85	73
2.86-2.91	72	2.84-2.89	72	2.82-2.87	72	2.87-2.92	73	2.85-2.90	73	2.83-2.89	73	2.86-2.91	74
2.92-2.97	73	2.90-2.95	73	2.88-2.94	73	2.93-2.98	74	2.91-2.97	74	2.90-2.95	74	2.92-2.97	75
2.98-3.03	74	2.96-3.02	74	2.95-3.00	74	2.99-3.05	75	2.98-3.03	75	2.96-3.01	75	2.98-3.04	76
3.04-3.10	75	3.03-3.08	75	3.01-3.06	75	3.06-3.11	76	3.04-3.09	76	3.02-3.07	76	3.05-3.10	77
3.11-3.15	76	3.09-3.14	76	3.07-3.13	76	3.12-3.17	77	3.10-3.16	77	3.09-3.14	77	3.11-3.17	78
3.17-3.22	77	3.15-3.21	77	3.14-3.19	77	3.18-3.24	78	3.17-3.22	78	3.15-3.20	78	3.18-3.23	79
3.23-3.29	78	3.22-3.27	78	3.20-3.25	78	3.25-3.30	79	3.23-3.29	79	3.21-3.26	79	3.24-3.31	80
3.30-3.35	79	3.28-3.33	79	3.26-3.32	79	3.31-3.36	80	3.29-3.34	80	3.27-3.33	80	3.32-3.37	81
3.36-3.41	80	3.34-3.40	80	3.33-3.38	80	3.37-3.43	81	3.35-3.41	81	3.34-3.39	81	3.38-3.44	82
3.42-3.48	81	3.41-3.46	81	3.39-3.44	81	3.44-3.49	82	3.42-3.47	82	3.40-3.46	82	3.45-3.50	83
3.49-3.54	82	3.47-3.52	82	3.45-3.51	82	3.50-3.55	83	3.48-3.53	83	3.46-3.52	83	3.51-3.57	84
3.55-3.60	83	3.53-3.59	83	3.52-3.57	83	3.56-3.61	84	3.54-3.60	84	3.53-3.58	84	3.58-3.63	85
3.61-3.67	84	3.60-3.65	84	3.58-3.63	85	3.62-3.68	85	3.61-3.66	85	3.59-3.64	85	3.64-3.69	86
3.68-3.73	85	3.66-3.71	85	3.64-3.69	85	3.69-3.74	86	3.67-3.72	86	3.65-3.71	86	3.70-3.75	87
3.74-3.79	86	3.72-3.77	85	3.70-3.76	86	3.75-3.80	87	3.73-3.79	87	3.72-3.77	87	3.76-3.82	88
3.80-3.86	87	3.78-3.84	87	3.77-3.82	87	3.81-3.87	88	3.80-3.85	88	3.78-3.83	88	3.83-3.89	89
3.87-3.92	88	3.85-3.90	88	3.83-3.88	88	3.88-3.93	89	3.86-3.91	89	3.84-3.90	89	3.90-3.96	90
3.93-3.98	89	3.91-3.96	89	3.89-3.95	89	3.94-3.99	90	3.92-3.98	90	3.91-3.96	90	3.97-4.03	91
3.99-4.03	90	3.97-4.00	91	3.96-4.00	90	4.00	91	3.99-4.00	91	3.97-4.00	91	4.04	92

VC+QC = 1 4 4		VC+QC = 1 4 5		VC+QC = 1 4 6		VC+QC = 1 4 7		VC+QC = 1 4 8		VC+QC = 1 4 9		VC+QC = 1 5 0		VC+QC = 1 5 1	
G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX	G.P.A.	INDEX
2.50-2.52	68	2.50	69	2.50-2.55	69	2.50-2.53	69	2.50-2.51	69	2.50	69	2.50-2.54	70	2.50-2.52	70
2.53-2.58	69	2.51-2.56	69	2.56-2.61	70	2.54-2.59	70	2.52-2.58	70	2.51-2.56	70	2.55-2.61	71	2.53-2.59	71
2.59-2.65	70	2.57-2.63	70	2.62-2.67	71	2.60-2.66	71	2.59-2.64	71	2.57-2.62	71	2.62-2.67	72	2.60-2.65	72
2.66-2.71	71	2.64-2.69	71	2.68-2.74	72	2.67-2.72	72	2.65-2.70	72	2.63-2.69	72	2.68-2.73	73	2.66-2.71	73
2.72-2.77	72	2.70-2.75	72	2.75-2.80	73	2.73-2.78	73	2.71-2.77	73	2.70-2.75	73	2.74-2.79	74	2.72-2.78	74
2.78-2.83	73	2.76-2.82	73	2.81-2.86	74	2.79-2.85	74	2.78-2.83	74	2.76-2.81	74	2.80-2.86	75	2.79-2.84	75
2.84-2.90	74	2.83-2.88	74	2.87-2.93	75	2.86-2.91	75	2.84-2.89	75	2.82-2.87	75	2.87-2.92	76	2.85-2.90	76
2.91-2.96	75	2.89-2.94	75	2.94-2.99	76	2.92-2.97	76	2.90-2.95	76	2.88-2.94	76	2.93-2.98	77	2.91-2.97	77
2.97-3.02	76	2.95-3.01	75	3.00-3.05	77	2.98-3.04	77	2.96-3.02	77	2.95-3.00	77	2.99-3.05	78	2.98-3.03	78
3.03-3.09	77	3.02-3.07	77	3.06-3.12	78	3.05-3.10	78	3.03-3.08	78	3.01-3.06	78	3.06-3.11	79	3.04-3.09	79
3.10-3.15	78	3.08-3.13	78	3.13-3.18	79	3.11-3.16	79	3.09-3.14	79	3.07-3.13	79	3.12-3.17	80	3.10-3.15	80
3.16-3.21	79	3.14-3.20	79	3.19-3.24	80	3.17-3.22	80	3.15-3.21	80	3.14-3.19	80	3.18-3.24	81	3.17-3.22	81
3.22-3.28	80	3.21-3.26	81	3.25-3.30	81	3.23-3.29	81	3.22-3.27	81	3.20-3.25	81	3.25-3.30	82	3.23-3.29	82
3.29-3.34	81	3.27-3.32	81	3.31-3.37	82	3.30-3.35	82	3.28-3.33	82	3.26-3.32	82	3.31-3.36	83	3.30-3.35	83
3.35-3.40	82	3.33-3.39	82	3.38-3.43	83	3.36-3.41	83	3.34-3.40	83	3.33-3.38	83	3.37-3.43	84	3.36-3.41	84
3.41-3.47	83	3.40-3.45	83	3.44-3.49	84	3.42-3.48	84	3.41-3.46	84	3.39-3.44	84	3.44-3.49	85	3.42-3.47	85
3.48-3.53	84	3.46-3.51	84	3.50-3.56	85	3.49-3.54	85	3.47-3.52	85	3.45-3.51	85	3.50-3.55	86	3.48-3.53	86
3.54-3.59	85	3.52-3.57	85	3.57-3.62	86	3.55-3.60	86	3.53-3.59	86	3.52-3.57	86	3.56-3.61	87	3.54-3.60	87
3.60-3.65	86	3.58-3.64	86	3.63-3.68	87	3.61-3.67	87	3.60-3.65	87	3.58-3.63	87	3.62-3.68	88	3.61-3.66	88
3.66-3.72	87	3.65-3.70	87	3.69-3.75	88	3.68-3.73	88	3.66-3.71	88	3.64-3.69	88	3.69-3.74	89	3.67-3.72	89
3.73-3.78	88	3.71-3.76	89	3.76-3.81	89	3.74-3.79	89	3.72-3.78	89	3.70-3.76	89	3.75-3.81	90	3.73-3.79	90
3.79-3.84	89	3.77-3.83	89	3.82-3.87	90	3.80-3.86	90	3.79-3.84	90	3.77-3.82	90	3.81-3.87	91	3.80-3.85	91
3.85-3.91	90	3.84-3.89	90	3.88-3.94	91	3.87-3.92	91	3.85-3.90	91	3.83-3.88	91	3.88-3.93	92	3.86-3.91	92
3.92-3.97	91	3.90-3.95	91	3.95-4.00	92	3.93-3.98	92	3.91-3.96	92	3.89-3.95	92	3.94-3.99	93	3.92-3.98	93
3.98-4.00	92	3.96-4.00	92			3.99-4.00	93	3.97-4.00	93	3.96-4.00	93	4.00	94	3.99-4.00	94

B. Study of Fall 1973 Applicants

To assess the impact of the new standards upon potential applicants the Admissions Office supplied information about students who applied for fall 73 as freshmen. Provided were summary data on 7,583 applicants, however, only 5,895 of this group had submitted WPC data reports in lieu of high school transcripts. The present study was limited to this latter sample for which data on high school credits and performance in the core areas were available. (The total group had mean GPA of 3.29, while the WPC sample had a mean of 3.33, representing slightly better achievement.)

What did the new Admissions Index distribution look like for this recent batch of applicants? Using a high school GPA based on the five core areas as indicated in the AI formula, Table 2 presents these data. Interesting is the fact that the average for this group of applicants, some of whom were clearly inadmissible, is almost the same as for those students who were admitted in 1970. As there is no evidence to suggest that present applicants are better prepared academically, the inference would appear to be that between time of application and actual entrance, the University loses as many from the top of this distribution as it eliminates from the bottom. The Admissions Office utilized the information in Table 2 in deciding to select a value of 70 as the initial safe score for admissions.

Table 2

Distribution of Admission Index Scores for 3,895 Fall 1973 UW Applicants

91 - 95	27
86 - 90	232
81 - 85	442
76 - 80	606
71 - 75	677
66 - 70	614
61 - 65	546
56 - 60	416
51 - 55	187
46 - 50	95
41 - 45	31
36 - 40	4
31 - 35	3
26 - 30	1
21 - 25	1
16 - 20	5
11 - 15	8

$\bar{X}$ = 70.05 SD = 10.93

To what extent had these applicants satisfied the distribution requirements in the core areas at the start of their senior year in high school? Table 3 indicates that by and large the distribution requirements had been met by this time with foreign language clearly the area of greatest deficit, particularly inasmuch as the 4 required credits must be in the same foreign language. There were at most 55 individuals who might not have enough time left in which to complete the required amounts of English (2), mathematics (2), foreign language (48), and social science (3).

Table 3

Distribution of High School Credits Completed in Core Areas by End of Junior Year for 3,895 Fall 1973 UW Applicants

Number credits[a]	English	Mathematics	Foreign language	Social science	Natural science
15	2				
14	5			1	
13	9		3	1	
12	29	2	2	7	1
11	62	12	3	19	0
10	158	20	20	75	7
9	207	40	30	73	15
8	528	315	103	143	72
7	667	287	153	202	111
6	1951	1905	827	905	675
5	208	302	349	944	318
4	52	904	1550	1263	1369
3	2	43	246	214	378
2		48	464	31	844
1		2	46	2	48
0			2	1	3
	3880	3880	3798	3881	3841

[a]One unit equals 2 credits.

It was clear that this sample of 1973 applicants tended to earn higher grades outside core areas than in them. While the overall GPA was 3.33, the core GPA was 3.26. Table 4 summarizes the differences between these two GPAs to illustrate the magnitude of the effect of elective grades upon overall GPA. Although the average difference reflects higher elective than core grades, there was close to one-third (N = 1206) who earned higher core grades. The truly large differences were, however, for those students who had higher elective grades.

Table 4

Difference between Core and Total High School GPA for Fall 1973 Applicants (N = 3880)

Core minus total	Frequency
.3	29
.2	212
.1	965
0	1910
-.1	725
-.2	379
-.3	168
-.4	64
-.5	22
-.6	4
-.7	0
-.8	2

Table 5

Declared Majors of Selected Applicants Whose Total High School GPAs Exceeded Core GPAs (N = 285)

Major	Frequency
A&S pre	210
BA pre	19
Engineering	15
Nursing	14
Forestry	8
Oceanography	4
Political science	2
Psychology	2
Music	2
One each from anth, art, biol, chem, drama, econ, hist, PE	8

In an attempt to gain some understanding of what these core-total differences might mean in terms of admissibility, admissions indices were computed for applicants based both upon core and total HS GPAs. A sample of 285 (7%) was identified as (1) having AI values below a hypothetical cut-point of 65 when AI was computed using core GPA, and (2) having AI values above this minimum when computed using total GPA. The largest discrepancy noted was 9 on the AI scale, e.g., an individual with a core-based AI of 59 vs. a total-based AI of 68. Table 5 lists the declared majors of these applicants who could be typified as doing better in elective courses than core courses. The table is relatively uninformative because, like the total applicant group, most prospective freshmen are pre-majors. It was not possible with this sample to answer the important question of which electives they had taken because the high school record employed by the Admissions Office was the WPC data report which lumps all courses in art, music, home economics, business, agriculture, and industrial arts into a single elective pool.

C. Grades in High School Elective Courses as Predictors of University Performance

The WPC Program for predictive purposes subdivides the high school curriculum into seven categories: English, foreign languages, mathematics, natural science, social studies, electives, and "special" electives. Separate GPA's are computed for the first six and used in their prediction equations. The first five map reasonably well to what the University calls core course work. The sixth, electives, is that pool of course work offered

in business (commercial), art, music, agriculture, home economics, and industrial arts. Special electives include courses in health and physical education, driver training, teacher's aide, bookroom monitor, etc. No GPA is computed over this last set.

For the most recently available study conducted by WPC (students who entered UW fall 1965 through fall 1967, summers excluded), the six high school GPAs correlated with cumulative GPA at University through the first two years as follows (parenthesized values are average high school GPAs in those areas for the entrants studied):

English (3.16)	.44
Foreign Language (3.03)	.37
Mathematics (2.92)	.40
Natural Science (3.05)	.40
Social Studies (3.22)	.45
Electives (3.26)	.19

With the exception of electives, the correlations cluster around .40. Why should the elective GPA fail as a useful predictor? Two hypotheses may be entertained: (1) the electives area is a heterogeneous collection so that the average is necessarily non-predictive although the elements may be predictive; (2) the elements are themselves non-predictive and this is reflected in the aggregate.

Because no study could be identified that investigated these alternatives a small sample study was mounted. High school transcripts were drawn for the alphabetically first 254 students who entered UW directly from high school fall 1968 (the last year a breakdown of specific electives was possible). Separate GPAs were calculated for the six subareas of WPC electives and these correlated with cumulative GPA at University for the first year (first year GPA rather than two-year performance was selected to keep sample shrinkage through attrition of students to a minimum). Results are summarized below.

Business (3.05)	.37	(n=152)
Art (3.39)	.21	(n=33)
Music (3.54)	.18	(n=84)
Agriculture		(n=2)
Home Economics (3.29)	.34	(n=86)
Industrial Arts (3.13)	.22	(n=68)

The n's listed above are the numbers (among the 233 completing the first year here) who had had high school work in the area. GPAs in business and home economics correlated with UW performance at a level characteristic of the low end of the range for core areas, while correlations for art, music, and industrial arts were at the low level previously observed for the composite electives pool (.19) (Because these new correlations are with first year UW performance, they may be expected to be higher than for two years.) Support is thus given hypothesis 1, that certain elective elements are predictive, and the elements are business and home economics.

Some cautionary comments: first, the lower correlations for art and music are probably related to the restricted range of high grades awarded, 3.54 in music and 3.39 in art. Second, these correlations are based upon very small samples and are hence less reliable than those cited earlier for core areas. Finally, because only small fractions of this sample took high school work in certain elective areas, they are probably unrepresentative, e.g., only 15% had work in art which group may have a peculiar and unpredictable first year.

Hypotheses 1 and 2 can also be turned to the areas of art and music. The problems with them as predictors were foreseen by University faculty in art and music who suggested that an attempt be made to identify specific courses in those areas which might be more predictive. At their suggestion, the following breakdowns of high school art and music were developed:

Art:	I	Art Appreciation (culture, history)
	II	Commercial Art (costume, display, graphics)
	III	Fine Arts (design, painting, drawing, sculpture)
	IV	Crafts (ceramics, jewelry, pottery, textiles)
Music:	I	Large Ensembles (band, orchestra, chorus, etc.)
	II	Small ensembles, individual instruction (applied music), fundamentals, theory, history, philosophy, appreciation.

Unfortunately, this complete breakdown could not be studied predictively with this limited sample. As can be seen, however, there were enough students in Art III (N = 45) and Music I (N = 100) to warrant further work. Among the 254 entrants the following distribution of art and music was identified:

Art:	I	0 students
	II	11 students (costume-2, commercial-7, applied-2)
	III	45 students (art-22, drawing and painting-14)
	IV	7 students (ceramics-5)
Music	I	100 students
	II	7 students (small vocal ensembles-4, non-performing-3)

When the art GPA was purified to include only Area III classes, the GPAs of only 2 (of 45) students were changed, hence, the correlation between Art III grades and UW performance would still be only .21, and the correlation between Music I grades and UW performance would still be .18 (again, here only 2 of 100 GPAs shifted). Consequently, the reported Art and Music correlations are essentially Art III-Fine Arts and Music I-Large Ensembles. And the question still remains as to whether the other areas in art and music are better than these two.

Finally, to check out the last remaining pool of any size of high school grades, Physical Education grades were summarized for the 55 among the 254 who had WPC data reports. All 55 had taken P.E. courses, although 7 of these for only Satisfactory grades. Three of the remaining 48 did not complete the freshman year at UW. The final bit of data, then, is the correlation between high school P.E. and UW freshman GPA for 45 students. This correlation was .07. (Auxiliary data suggest that the group may not be too unrepresentative. Because these data were drawn from WPC data reports, high school GPAs in the five core areas were also available. Correlations of these predictors with University performance in this sample were consistent with what is known for the population of University entrants.)

Even though the electives courses correlate only .19 with two-year University performance, the question may still be asked: But don't these grades improve the core GPA, add appreciably to it? To answer this question the WPC program provided two correlations based upon the total of 1965-67 entrants. Core high school GPA correlated .52 while total high school GPA (adding in the standard electives) correlated .51 with university grades. These data nearly exactly parallel findings reported by Paul Horst for University students of a decade ago that there is no evidence that the total GPA is more predictive than the core or academic GPA.

References

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